**Answer on Question 52734, Physics, Optics**

**Question:**

A concave mirror has a focal length of $20cm$. Where is the image located when the object is placed $60cm$ from the mirror?

a) $15cm$ in front

b) $30cm$ in front

c) $60cm$ in front

d) $15cm$ at the back

**Solution:**

Let's use the mirror equation:

$$\frac{1}{d_{image}} + \frac{1}{d_{object}} = \frac{1}{f},$$

$$\frac{1}{d_{image}} + \frac{1}{60cm} = \frac{1}{20cm},$$

$$\frac{1}{d_{image}} = \frac{1}{20cm} - \frac{1}{60cm} = \frac{2}{60cm} = \frac{1}{30cm},$$

$$d_{image} = 30cm.$$

The positive sign of $d_{image}$ indicate that the image is located in front of the concave mirror.

**Answer:**

**b) $30cm$ in front**